

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	151	556/404	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:39
L2	173	556/405	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:39
L3	290	I1 or I2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:40
L4	93	I3 and film	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:40
L5	57	I3 and copper	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:40
L6	33	I5 and film	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:56
L7	2	copper undercoat film	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:57
L8	1213	undercoat film	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:57
L9	185	I8 and copper	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:57

EAST Search History

L10	36	l8 same copper	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 13:00
L11	7	l10 and Si	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 12:57
L12	2786331	si or silicone	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 13:00
L13	12	l10 and l12	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	ADJ	ON	2006/09/07 13:00

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and display fields
NEWS 11 JUN 28 Price changes in full-text patent databases EPFULL and PCTFULL
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NEWS 15 AUG 09 INSPEC enhanced with 1898-1968 archive
NEWS 16 AUG 28 ADISCTI Reloaded and Enhanced
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MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
AND CURRENT DISCOVER FILE IS DATED 26 JUNE 2006.

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FILE 'HOME' ENTERED AT 10:59:34 ON 07 SEP 2006

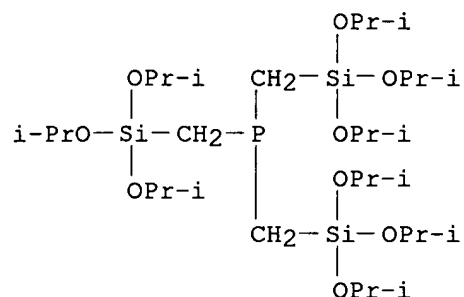
=> file reg

COST IN U.S. DOLLARS

SINCE FILE
ENTRY

TOTAL
SESSION

methylethoxy)-6-[[tris(1-methylethoxy)silyl]methyl]-, homopolymer (9CI)
 MF (C30 H69 O9 P Si3)x
 CI PMS
 CM 1

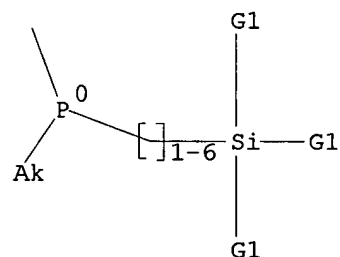


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):end

=>
 Uploading C:\Program Files\Stnexp\Queries\10732812-limited-2.str

L7 STRUCTURE UPLOADED

=> d 17
 L7 HAS NO ANSWERS
 L7 STR



G1 MeO, EtO, n-PrO, i-PrO, n-BuO, i-BuO, s-BuO, t-BuO, NH, NH2, X

Structure attributes must be viewed using STN Express query preparation.

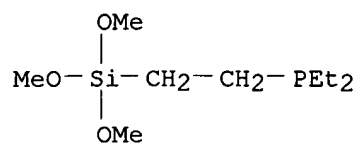
=> s 17 sub=l6
 ENTER SUBSET SEARCH SCOPE - SAMPLE, FULL, RANGE, OR (END): full
 FULL SUBSET SEARCH INITIATED 11:10:39 FILE 'REGISTRY'
 FULL SUBSET SCREEN SEARCH COMPLETED - 59 TO ITERATE

100.0% PROCESSED 59 ITERATIONS 22 ANSWERS
 SEARCH TIME: 00.00.01

L8 22 SEA SUB=L6 SSS FUL L7

=> d 18 scan

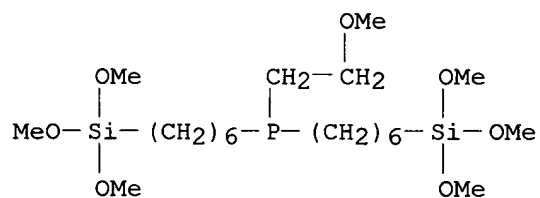
L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, diethyl[2-(trimethoxysilyl)ethyl]- (9CI)
 MF C9 H23 O3 P Si



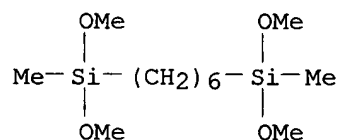
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):21

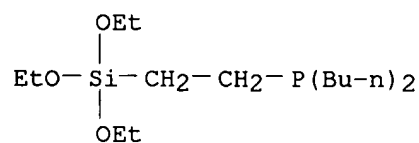
L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN 2,18-Dioxa-10-phospha-3,17-disilanonadecane, 3,3,17,17-tetramethoxy-10-(2-methoxyethyl)-, polymer with 3,10-dimethoxy-3,10-dimethyl-2,11-dioxa-3,10-disiladodecane (9CI)
 MF (C21 H49 O7 P Si2 . C12 H30 O4 Si2)x
 CI PMS
 CM 1



CM 2



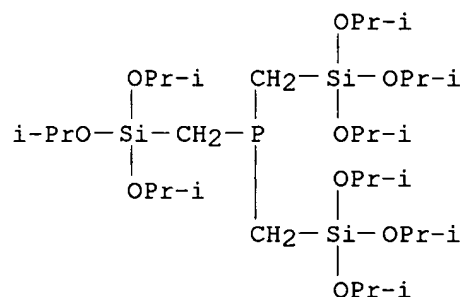
L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, dibutyl[2-(triethoxysilyl)ethyl]- (9CI)
 MF C16 H37 O3 P Si



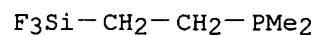
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN

IN 3,9-Dioxa-6-phospha-4,8-disilaundecane, 2,10-dimethyl-4,4,8,8-tetrakis(1-methylethoxy)-6-[[tris(1-methylethoxy)silyl]methyl]-, homopolymer (9CI)
 MF (C30 H69 O9 P Si3)x
 CI PMS
 CM 1

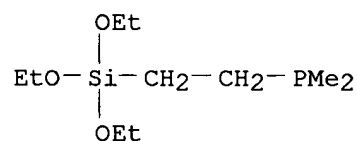


L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, dimethyl[2-(trifluorosilyl)ethyl]- (8CI, 9CI)
 MF C4 H10 F3 P Si



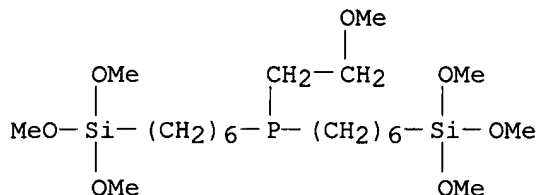
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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 MF C10 H25 O3 P Si

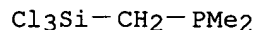


PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN 2,18-Dioxa-10-phospha-3,17-disilanonadecane, 3,3,17,17-tetramethoxy-10-(2-methoxyethyl)-, homopolymer (9CI)
 MF (C21 H49 O7 P Si2)x
 CI PMS
 CM 1

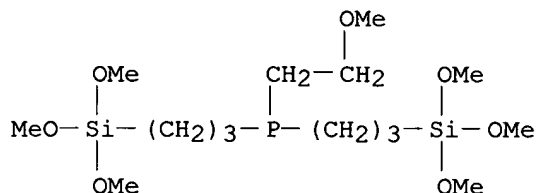


L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, dimethyl[(trichlorosilyl)methyl]- (9CI)
 MF C3 H8 Cl3 P Si



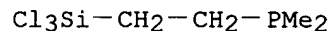
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN 2,12-Dioxa-7-phospha-3,11-disilatridecane, 3,3,11,11-tetramethoxy-7-(2-methoxyethyl)- (9CI)
 MF C15 H37 O7 P Si2
 CI COM



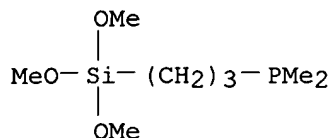
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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 IN Phosphine, dimethyl[2-(trichlorosilyl)ethyl]- (8CI, 9CI)
 MF C4 H10 Cl3 P Si



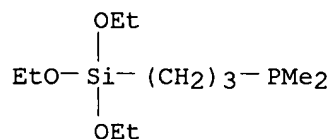
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, dimethyl[3-(trimethoxysilyl)propyl]- (9CI)
 MF C8 H21 O3 P Si



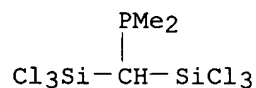
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, dimethyl[3-(triethoxysilyl)propyl]- (9CI)
 MF C11 H27 O3 P Si



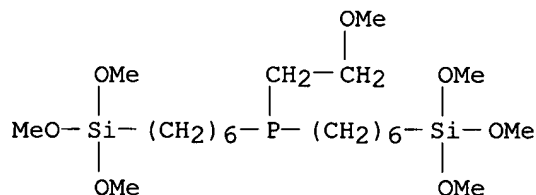
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, [bis(trichlorosilyl)methyl]dimethyl- (9CI)
 MF C3 H7 Cl6 P Si2



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

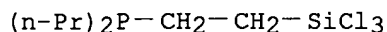
L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN 2,18-Dioxa-10-phospha-3,17-disilanonadecane, 3,3,17,17-tetramethoxy-10-(2-methoxyethyl)- (9CI)
 MF C21 H49 O7 P Si2
 CI COM



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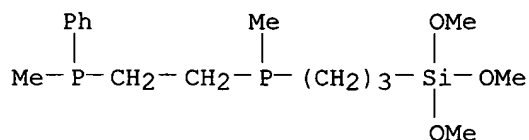
L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN

IN Phosphine, dipropyl[2-(trichlorosilyl)ethyl]- (9CI)
MF C8 H18 Cl3 P Si



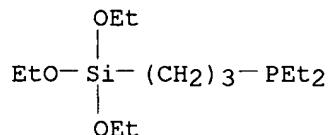
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
IN 2-Oxa-7,10-diphospha-3-silaundecane, 3,3-dimethoxy-7-methyl-10-phenyl-
(9CI)
MF C16 H30 O3 P2 Si



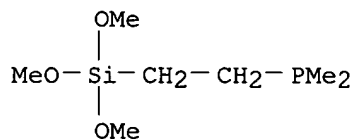
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
IN Phosphine, diethyl[3-(triethoxysilyl)propyl]- (9CI)
MF C13 H31 O3 P Si



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
IN Phosphine, dimethyl[2-(trimethoxysilyl)ethyl]- (9CI)
MF C7 H19 O3 P Si



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

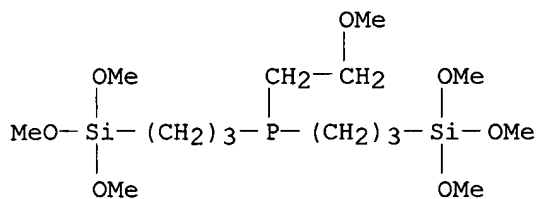
L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
IN 2,12-Dioxa-7-phospha-3,11-disilatridecane, 3,3,11,11-tetramethoxy-7-(2-

methoxyethyl)-, polymer with 3,10-dimethoxy-3,10-dimethyl-2,11-dioxa-3,10-disiladodecane (9CI)

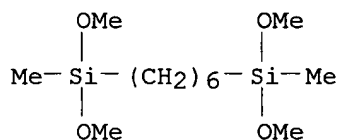
MF (C15 H37 O7 P Si2 . C12 H30 O4 Si2)x

CI PMS

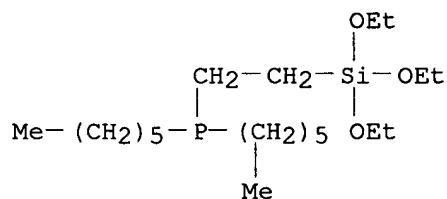
CM 1



CM 2

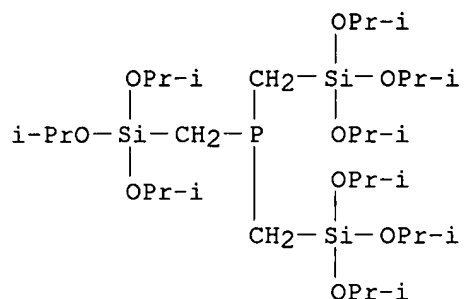


L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, dihexyl[2-(triethoxysilyl)ethyl]- (9CI)
 MF C20 H45 O3 P Si



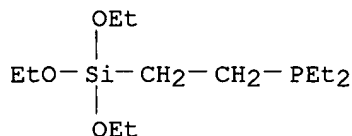
PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN 3,9-Dioxa-6-phospha-4,8-disilaundecane, 2,10-dimethyl-4,4,8,8-tetrakis(1-methylethoxy)-6-[[tris(1-methylethoxy)silyl]methyl]- (9CI)
 MF C30 H69 O9 P Si3
 CI COM



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

L8 22 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN
 IN Phosphine, diethyl[2-(triethoxysilyl)ethyl]- (7CI, 8CI, 9CI)
 MF C12 H29 O3 P Si



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

ALL ANSWERS HAVE BEEN SCANNED

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

380.76

380.97

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=> s 18

L9 28 L8

=> s 19 not py > 2002

4296690 PY > 2002

L10 26 L9 NOT PY > 2002

=> s 19 not py > 2001

5275216 PY > 2001

L11 25 L9 NOT PY > 2001

=> d l11 ibib abs hitstn 1-

'HITSTN' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'

The following are valid formats:

ABS ----- GI and AB

ALL ----- BIB, AB, IND, RE

APPS ----- AI, PRAI

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DMAX ----- MAX, delimited for post-processing

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IND ----- Indexing data

IPC ----- International Patent Classifications

MAX ----- ALL, plus Patent FAM, RE

PATS ----- PI, SO

SAM ----- CC, SX, TI, ST, IT

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e.g., D SCAN or DISPLAY SCAN)

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OBIB ----- AN, plus Bibliographic Data (original)

OIBIB ----- OBIB, indented with text labels

SBIB ----- BIB, no citations

SIBIB ----- IBIB, no citations

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HITSEQ ----- HIT RN, its text modification, its CA index name, its
structure diagram, plus NTE and SEQ fields

FHITSTR ----- First HIT RN, its text modification, its CA index name, and

its structure diagram
 FHITSEQ ----- First HIT RN, its text modification, its CA index name, its
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 FHITSTR, HITSEQ, FHITSEQ, KWIC, and OCC) may be used with DISPLAY ACC
 to view a specified Accession Number.
 ENTER DISPLAY FORMAT (BIB):end

=> d l11 ibib abs hitstr 1-
 YOU HAVE REQUESTED DATA FROM 25 ANSWERS - CONTINUE? Y/(N):y

L11 ANSWER 1 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:377045 CAPLUS

DOCUMENT NUMBER: 131:185312

TITLE: Sol-Gel Processed Phosphine Ligands with Two T- or
 D-Silyl Functionalities and Their (η^5 -C₅Me₅)Ru(II)
 Complexes

AUTHOR(S): Lindner, Ekkehard; Wielandt, Wolfram; Baumann,
 Andreas; Mayer, Hermann A.; Reinoehl, Ulrich; Weber,
 Achim; Ertel, Teja S.; Bertagnolli, Helmut

CORPORATE SOURCE: Institut fuer Anorganische Chemie der Universitaet,
 Tuebingen, D-72076, Germany

SOURCE: Chemistry of Materials (1999), 11(7), 1833-1845
 CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new class of hemilabile D- and T-functionalized ether phosphine ligands
 MeOCH₂CH₂P[(CH₂)zSiMem(OMe)_{3-m}]₂ [3a,b,d,e(T0) (m = 0: z = 3 (a), 6 (b), 8
 (d), 14 (e)), and 3c(D0) (m = 1; z = 6 (c))] was obtained by treatment of
 2-methoxyethylphosphine (1) with the ω -alkenylsilanes
 H₂C:CH(CH₂)zSiMem(OMe)_{3-m} (2a-e). Treatment of [η^5 -C₅Me₅]RuCl]₄ with
 the T-silyl phosphines 3a,b,d,e(T0) gave the corresponding complexes
 (η^5 -C₅Me₅)RuCl{MeOCH₂CH₂P[(CH₂)zSiMem(OMe)_{3-m}]₂]₂ [4a,b,d,e(T0)]. In
 the presence of MeCN and AgSbF₆ 4b(T0) affords the cationic T-silyl
 complex [(η^5 -C₅Me₅)Ru-(NCCH₃){MeOCH₂CH₂P[(CH₂)6SiMem(OMe)_{3-m}]₂]₂]+SbF₆-
 [5b(T0)]. 3A,b,d,e(T0), 3c(D0), 4a,b,d,e(T0), and 5b(T0) were sol-gel
 processed with variable amts. of the co-condensation agent
 (MeO)₂MeSi(CH₂)₆SiMe(OMe)₂ (D0-C6-D0) to give the stationary phases (Fn =
 functionality \rightarrow ligands or complexes) {Fn[SiOn/2(OX)_{3-n}]
 n]₂{MeSiOi/2(OX)_{2-i}(CH₂)₆(XO)_{2-i}Oi/2SiMe}_y, Fn = P(CH₂CH₂OMe)[(CH₂)z-]₂
 [3a,b,d,e(Tn)₂(Di-C6-Di)_y.apprch. I1, II0-II4, IV1, V1],
 {Fn[SiOi/2(OX)_{2-i}Me]₂{MeSiOi/2(OX)_{2-i}(CH₂)₆(XO)_{2-i}Oi/2SiMe}₄
 [3c(Di)₂(Di-C6-Di)₄.apprch. III4], Fn = [Cp*RuCl]₁/2P(CH₂CH₂OMe)[(CH₂)z-]
]₂ [4a,b,d,e(Tn)₄(Di-C6-Di)_y.apprch. VII1, VII0, VIII1, VIII1, IX1], and Fn
 = {[Cp*Ru(NCCH₃)]₁/2P(CH₂CH₂OMe)[(CH₂)₆-]₂ [5b(Tn)₄(Di-C6-Di)₄
 .apprch. X4] (see Table 1) [T = T-type Si atom (three O neighbors); D =
 D-type Si atom (two O neighbors); n, i = number of Si-O-Si bonds; n = 0-3, i
 = 0-2; y = number of co-condensed D0-C6-D0 mols.]. Realistic amts. of T and
 D species and the degree of condensation were determined 29Si CP/MAS NMR
 spectroscopically. The polymeric phosphines I1, II0-II4, IV1, and V1 show
 higher degrees of condensation than the corresponding Ru(II) complexes

VII1, VII0, VIII1, VIII1, and IX1. Bond lengths of the Ru(II) complex in the stationary phase VII0 were elucidated by an EXAFS anal. From relaxation time studies (T1P, T1pH) and cross-polarization expts. (TPH), the polymeric phosphines II, II0-II4, IV1, and VI reveal an increasing mobility with longer alkyl spacers between the polymer and the P-functionality and an increasing amount of the co-condensation agent D0-C6-D0. Owing to the multiple fixation of the Ru centers to the polymeric matrixes in the stationary phases VII1, VII0, VIII1, VIII1, IX1, and X4, the mobility in these materials is reduced. 1H,13C-2D-WISE NMR studies on the interphase set up by X4 and EtOH point to a remarkable decrease of the rigid character compared to the stationary phase X4 without EtOH.

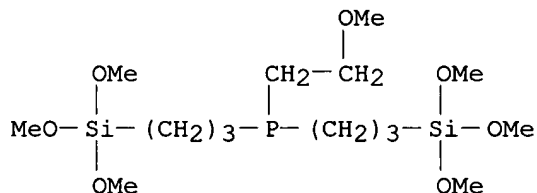
IT 240398-87-2P 240398-89-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(ligand; synthesis, characterization and sol-gel polymerization of phosphine ligands with silyl functionalities and their (η^5 -C5Me5)Ru(II) complexes)

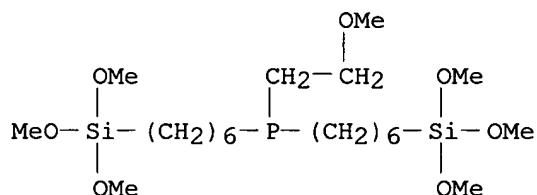
RN 240398-87-2 CAPLUS

CN 2,12-Dioxa-7-phospha-3,11-disilatridecane, 3,3,11,11-tetramethoxy-7-(2-methoxyethyl)- (9CI) (CA INDEX NAME)



RN 240398-89-4 CAPLUS

CN 2,18-Dioxa-10-phospha-3,17-disilanonadecane, 3,3,17,17-tetramethoxy-10-(2-methoxyethyl)- (9CI) (CA INDEX NAME)



IT 240398-93-0P 240398-95-2P 240398-97-4P

RL: SPN (Synthetic preparation); PREP (Preparation)

(polymeric ligand; synthesis, characterization and sol-gel polymerization of phosphine ligands with silyl functionalities and their (η^5 -C5Me5)Ru(II) complexes)

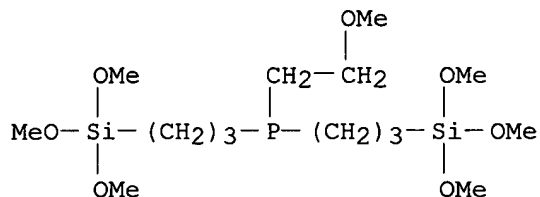
RN 240398-93-0 CAPLUS

CN 2,12-Dioxa-7-phospha-3,11-disilatridecane, 3,3,11,11-tetramethoxy-7-(2-methoxyethyl)-, polymer with 3,10-dimethoxy-3,10-dimethyl-2,11-dioxa-3,10-disiladodecane (9CI) (CA INDEX NAME)

CM 1

CRN 240398-87-2

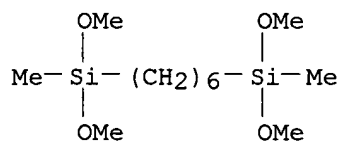
CMF C15 H37 O7 P Si2



CM 2

CRN 191917-78-9

CMF C12 H30 O4 Si2



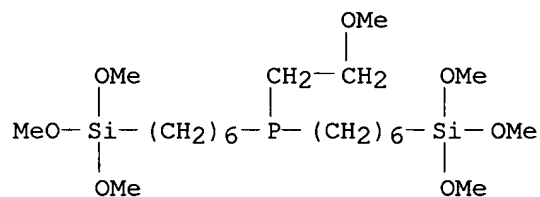
RN 240398-95-2 CAPLUS

CN 2,18-Dioxa-10-phospha-3,17-disilanonadecane, 3,3,17,17-tetramethoxy-10-(2-methoxyethyl)-, polymer with 3,10-dimethoxy-3,10-dimethyl-2,11-dioxa-3,10-disiladodecane (9CI) (CA INDEX NAME)

CM 1

CRN 240398-89-4

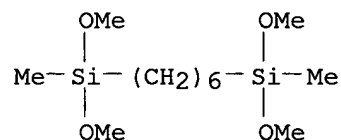
CMF C21 H49 O7 P Si2



CM 2

CRN 191917-78-9

CMF C12 H30 O4 Si2

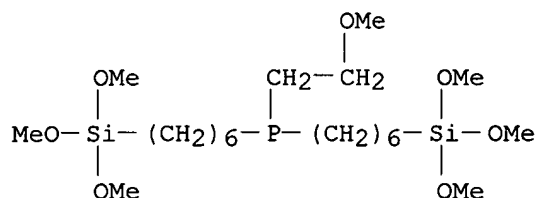


RN 240398-97-4 CAPLUS

CN 2,18-Dioxa-10-phospha-3,17-disilanonadecane, 3,3,17,17-tetramethoxy-10-(2-methoxyethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 240398-89-4
CMF C21 H49 O7 P Si2



REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 2 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:560282 CAPLUS

DOCUMENT NUMBER: 129:232286

TITLE: Silica hybrid gel catalysts containing Group (VIII) transition metal complexes: Preparation, structural, and catalytic properties in the synthesis of N,N-dimethylformamide and methyl formate from supercritical carbon dioxide

AUTHOR(S): Krocher, Oliver; Koppel, Rene A.; Froba, Michael; Baiker, Alfons

CORPORATE SOURCE: Laboratory of Technical Chemistry, ETH Zentrum, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.

SOURCE: Journal of Catalysis (1998), 178(1), 284-298

CODEN: JCTLA5; ISSN: 0021-9517

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Sol-gel derived hybrid materials containing group(VIII) transition metal complexes in a porous silica network were prepared and tested for the catalytic synthesis of N,N-dimethylformamide (DMF) and Me formate (MF) from supercrit. carbon dioxide, hydrogen, and dimethylamine and methanol/triethylamine, resp. Bifunctional silylether phosphines X = Ph₂P(CH₂)₂Si(OEt)₃ and Y = Me₂P(CH₂)₂Si(OEt)₃ were used as ligands for the preparation of complexes of the type RuCl₂X₃, RuCl₂Y₃, MClX₃ (M = Ir, Rh), and MCl₂X₂ (M = Pt, Pd). The silylether complexes were anchored in a silica matrix by co-condensation with Si(OEt)₄. The textural and structural properties of the hybrid gels were characterized by ³¹P and ²⁹Si NMR spectroscopy, extended x-ray absorption fine structure (EXAFS), x-ray diffraction, TEM, and nitrogen and argon physisorption. ³¹P NMR spectroscopy confirmed nondestructive immobilization of the Ru, Pt, Pd, Rh, and Ir complexes. TEM and x-ray diffraction analyses proved the homogeneity and non-crystallinity of the materials. The degree of condensation of the gels and the mol. mixing of the components was studied by solid state ²⁹Si NMR spectroscopy. Textural characterization showed that all gels were micro- to mesoporous. EXAFS measurements indicated no metal-metal interactions, confirming that the organometallic complexes were immobilized as monomers. From all catalysts silica matrix stabilized ruthenium complexes exhibited the highest activity at 100% selectivity in DMF synthesis from CO₂, H₂, and dimethylamine. The corresponding turnover frequency (TOF) of 1860 h⁻¹ exceeded those reported so far for heterogeneous catalysts by a factor of 600. In Me formate synthesis, TOFs up to 115 h⁻¹ were reached. (c) 1998 Academic Press.

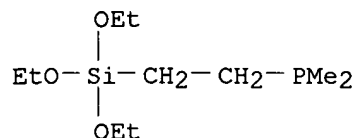
IT 180590-61-8, [2-(Triethoxysilyl)ethyl]dimethylphosphine

RL: RCT (Reactant); RACT (Reactant or reagent)

(hybrid gel Group (VIII) transition metal complex catalysts in manufacture of DMF and Me formate from supercrit. carbon dioxide)

RN 180590-61-8 CAPLUS

CN Phosphine, dimethyl[2-(triethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 3 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:483268 CAPLUS

DOCUMENT NUMBER: 129:203342

TITLE: Preparation and characterization of new organic-inorganic hybrid materials incorporating phosphorus centers

AUTHOR(S): Bezombes, Jean-Philippe; Chuit, Claude; Corriu, Robert J. P.; Reye, Catherine

CORPORATE SOURCE: Laboratoire de Chimie Moléculaire et Organisation du Solide. UMR 5637, Université Montpellier II, Montpellier, F-34095, Fr.

SOURCE: Journal of Materials Chemistry (1998), 8(8), 1749-1759
CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The reaction of p-bromo(triisopropoxy)silylbenzene with magnesium led to stable THF solns. of the corresponding Grignard reagent. The reaction of the Grignard reagent with PCl_3 or PhPCl_2 gave phosphines I and II, resp. LiAlH_4 reduction of I afforded phosphine III. Compds. I and III were transformed into phosphorus derivs. including BH_3 , $\text{W}(\text{CO})_5$, platinum and palladium complexes, all of them bearing three hydrolyzable groups. Hydrolysis and condensation of these phosphorus derivs. in the presence of an acid catalyst resulted in the formation of new hybrid organic-inorg. xerogels incorporating phosphorus centers. Solid state ^{13}C , ^{29}Si , and ^{31}P NMR spectroscopies were used to evaluate the integrity of the organic moiety and to determine the degrees of hydrolysis and condensation in the network materials. It was shown that during the sol-gel process there is no alteration around the phosphorus center. The xerogels are amorphous microporous materials with sp. surface areas lying between less than 10 m^2g^{-1} and 800 m^2g^{-1} depending on the exptl. conditions. In contrast with these results, complete cleavage of the SiC bonds was observed during the hydrolysis and polycondensation of tris(triisopropoxy)silylmethylphosphine and tris(trihydrosilylmethyl)phosphine.

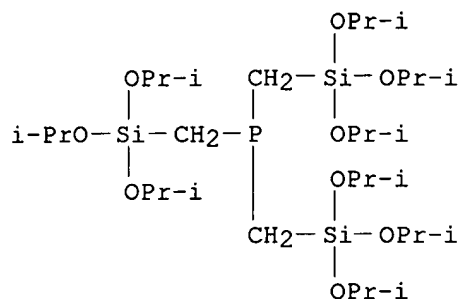
IT 212116-24-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(monomer; preparation of phosphorus-containing silsesquioxane xerogels by sol-gel process)

RN 212116-24-0 CAPLUS

CN 3,9-Dioxa-6-phospha-4,8-disilaundecane, 2,10-dimethyl-4,4,8,8-tetrakis(1-methylethoxy)-6-[[tris(1-methylethoxy)silyl]methyl]- (9CI) (CA INDEX NAME)



IT 212116-45-5P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of phosphorus-containing silsesquioxane xerogels by sol-gel process)

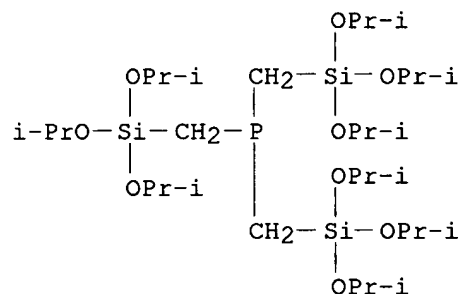
RN 212116-45-5 CAPLUS

CN 3,9-Dioxa-6-phospha-4,8-disilaundecane, 2,10-dimethyl-4,4,8,8-tetrakis(1-methylethoxy)-6-[[tris(1-methylethoxy)silyl]methyl]-, homopolymer (9CI)
(CA INDEX NAME)

CM 1

CRN 212116-24-0

CMF C30 H69 O9 P Si3



REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 4 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:127105 CAPLUS

DOCUMENT NUMBER: 128:175271

TITLE: Formation of Crystalline Nanoclusters of Fe₂P, RuP, Co₂P, Rh₂P, Ni₂P, Pd₅P₂, or PtP₂ in a Silica Xerogel Matrix from Single-Source Molecular Precursors

AUTHOR(S): Lukehart, C. M.; Milne, Stephen B.; Stock, S. R.

CORPORATE SOURCE: Department of Chemistry, Vanderbilt University, Nashville, TN, 37235, USA

SOURCE: Chemistry of Materials (1998), 10(3), 903-908
CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

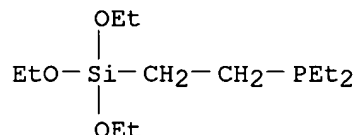
AB Metal complexes containing bifunctional phosphine ligands that possess alkoxysilyl functional groups were prepared for seven metals of the 1st, 2nd, or 3rd transition metal series. Incorporation of these single-source precursors into silica xerogel matrixes using sol-gel chemical affords molecularly doped xerogels. Subsequent thermal treatment of these doped xerogels under solely reducing conditions selectively affords nanoclusters

of Fe₂P, RuP, Co₂P, Rh₂P, Ni₂P, Pd₅P₂, or PtP₂ which are highly dispersed throughout the bulk of the xerogel matrix. Characterization of these nanocomposite materials by TEM, energy-dispersive spectrometry, x-ray diffraction, and electron diffraction indicates that the metal phosphide nanoclusters are highly crystalline with some exhibiting nonspherical morphol.

IT 18082-97-8, Diethyl[2-(triethoxysilyl)ethyl]phosphine
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for preparation of transition metal phosphide crystalline nanoclusters in silica xerogel matrix)

RN 18082-97-8 CAPLUS

CN Phosphine, diethyl[2-(triethoxysilyl)ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 5 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:441531 CAPLUS

DOCUMENT NUMBER: 125:178543

TITLE: Sol-gel derived hybrid materials as heterogeneous catalysts for the synthesis of N,N-dimethylformamide from supercritical carbon dioxide

AUTHOR(S): Kroeher, Oliver; Koepfel, Rene A.; Baiker, Alfons

CORPORATE SOURCE: Department Chemical Engineering Industrial Chemistry, Swiss Federal Institute Technology, Zurich, CH-8092, Switz.

SOURCE: Chemical Communications (Cambridge) (1996), (13), 1497-1498

CODEN: CHCOFS; ISSN: 1359-7345

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Hybrid materials derived from Group VIII metal-chloro complexes of the type MCl₂X₂ (M = Pt, Pd), MCIX₃ (M = Rh, Ir) and especially RuCl₂X₃ [X = Ph₂P(CH₂)₂Si(OEt)₃, Me₂P(CH₂)₂Si(OEt)₃] by cocondensation with Si(OEt)₄ via a sol-gel process are highly active heterogeneous catalysts for the synthesis of N,N-dimethylformamide (DMF) from CO₂, H₂ and dimethylamine under supercrit. conditions, affording turnover nos. up to 110,800 at 100% selectivity.

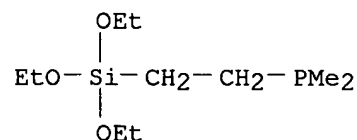
IT 180590-61-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(sol-gel derived hybrid materials as heterogeneous catalysts for synthesis of N,N-dimethylformamide from supercrit. carbon dioxide)

RN 180590-61-8 CAPLUS

CN Phosphine, dimethyl[2-(triethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 6 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:680118 CAPLUS

DOCUMENT NUMBER: 115:280118

TITLE: Alternative ligands. XXI. Novel donor/acceptor ligands
Me₂PCH₂CH₂SiFnMe_{3-n}, Me₂PCH₂CH₂SiR(C₆H₄F)₂, and
(2-Me₂PC₆H₄)SiXMe₂

AUTHOR(S): Grobe, J.; Hildebrandt, W.; Martin, R.; Walter, A.

CORPORATE SOURCE: Anorg.-Chem. Inst., Westfael. Wilhelms-Univ.,
Muenster, D-4400, Germany

SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie
(1991), 592, 121-40

CODEN: ZAACAB; ISSN: 0044-2313

DOCUMENT TYPE: Journal

LANGUAGE: German

OTHER SOURCE(S): CASREACT 115:280118

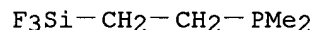
AB Donor/acceptor ligands of the type Me₂PCH₂CH₂SiX₃ [X = Cl, F (I), Me, OMe], (Me₂PCH₂CH₂)₂SiX₂ (X = Cl, F), Me₂PCH₂CH₂SiX(C₆H₄F)₂ (X = F, Me), and Me₂PCH₂CH₂SiX_nMe_{3-n} [n = 1; X = Cl, F; n = 2; X = F (II)] are prepared in yields between 42 and 95% by photochem. addition of Me₂PH to the corresponding vinylsilane precursors. In case of the halogen containing representatives formation of solid polyadducts, due to Lewis acid/base interaction between P-donor and Si-acceptor function, reduces the yields. Ligands of the type (2-Me₂PC₆H₄)SiXMe₂ (X = NMe₂, Cl, F) are obtained by two different routes using 2-chlorobromobenzene as the starting material. Study of the influence of dissoln. on the proton and fluorine resonances of I and II elucidated the associative properties. Investigation of the adduct equilibrium and cleavage of the polyadduct of I using NH₄F and Me₄NF for the formation of [Me₂PCH₂CH₂SiF₅]₂⁻ was investigated. Oligo- and polymerization are due to P→Si interaction.

IT 33845-46-4P 33845-47-5P 101409-18-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and multinuclear NMR of)

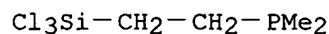
RN 33845-46-4 CAPLUS

CN Phosphine, dimethyl[2-(trifluorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)



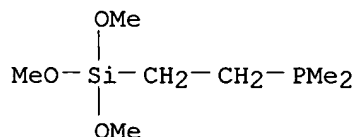
RN 33845-47-5 CAPLUS

CN Phosphine, dimethyl[2-(trichlorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)



RN 101409-18-1 CAPLUS

CN Phosphine, dimethyl[2-(trimethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 7 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1987:407268 CAPLUS

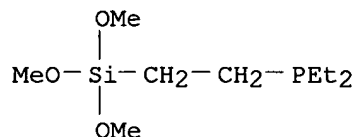
DOCUMENT NUMBER: 107:7268

TITLE: Silica-supported bis(trialkylphosphine)platinum oxalates. Photogenerated catalysts for hydrosilylation of olefins
AUTHOR(S): Prignano, Andrea L.; Trogler, William C.
CORPORATE SOURCE: Dep. Chem., Univ. California, San Diego, La Jolla, CA, 92093, USA
SOURCE: Journal of the American Chemical Society (1987), 109(12), 3586-95
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 107:7268

AB A heterogeneous hydrosilylation catalyst was prepared by linking a photoactive Pt(C2O4)L2 complex to silica (300 m2/g) by using the functionalized ligand L = (MeO)3Si(CH2)2PEt2. Unreacted surface hydroxyls were capped with inert SiMe3 groups in all expts. The surface-attached oxalate complex was characterized by 13C, 31P, and 29Si cross-polarization magic angle spinning solid-state NMR spectroscopies. The complex binds to the surface with an intact coordination sphere. At maximum loading (5.4 + 10-4 mol of Pt/g) the NMR data suggest about 75% of the complexes bind to the surface with both L. UV irradiation results in the loss of the oxalate ligand as CO2 and the formation of a surface-attached PtL2 species that can be trapped with CO to yield a supported PtL2(CO)2 species. A bridging carbonyl species is observed in the FTIR spectrum on extended irradiation. Scanning and transmission electron microscopy failed to show clustering or polymerization of the complex on the surface down to 20-Å resolution. UV irradiation of the supported complex in 1-heptene or MeSiHCl2 generated a catalyst for hydrosilylation on addition of MeSiHCl2 or 1-heptene, resp. The lack of catalytic activity in the filtrate and the retention of catalytic activity in the silica after filtration and washing of the activated catalyst suggest the catalyst is heterogeneous. Apparently the small trialkylphosphine ligand tightly binds the platinum on the surface. The kinetic behavior of the supported catalyst differs from soluble hydrosilylation catalysts in its sensitivity toward oxygen, lack of an induction period, and inhibition observed with coordinating solvents or excess olefin. Addition of Hg, a poison for metallic Pt, to catalysis solns. did not alter the catalytic rate. Thermal activation of the supported oxalate complex (200°) produces Pt particles (.apprx.20-Å diameter by TEM) on the surface. This sample catalyzes hydrosilylation of olefins after a long induction period, and addition of Hg to the catalysis solution quenches all catalytic activity. The catalytically active site for the photoactive catalyst is postulated to be monomeric with a turnover rate at 30° of about 80-340 h-1/site.

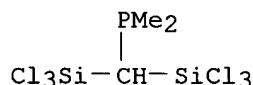
IT 106636-91-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and ligand substitution reactions of, with platinum complexes)
RN 106636-91-3 CAPLUS
CN Phosphine, diethyl[2-(trimethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



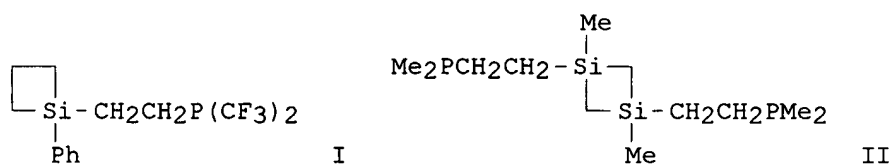
L11 ANSWER 8 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1987:77537 CAPLUS
DOCUMENT NUMBER: 106:77537

130° (15 h), by cleavage of all Si-P bonds to (Cl₃Si)₂C:PMe₂PM₂:C(SiCl₃)₂ (II), (Cl₃Si)₂CHPMe₂, III, and IV. The course of this reaction incorporates a number of stages of which the compds. (Cl₃Si)₂C:PMe₂P(Me)SiMe₃, (Cl₃Si)₂C:PMe₂PM₂P(Me)SiMe₃ and ClP(Me)SiMe₃ are important and are yet to be isolated. The reaction of (Cl₃Si)₂C:PMe₂Cl with LiP(SiMe₂)₂ produces II as well as P₂(SiMe₃)₄ and P(SiMe₃)₃. The formation of II can be explained by the initial formation of the intermediate (Cl₃Si)₂C:PMe₂P(SiMe₂)₂ which reacts with I to produce II and ClP(SiMe₃)₂. The formation of P₂(SiMe₃)₄ is also explained by the reaction of ClP(SiMe₃)₂ with LiP(SiMe₃)₄. The reaction of I with Me₃SiPMe₂ yielding (Cl₃Si)₂C(H)PMe₂ at 130° 15-20 h is related to the formation of (Me₃Si)₂C(H)PMe₂ from corresponding Si-methylated phosphorylides with the exception that, at 0°, this reaction goes to completion within a few minutes.

IT 96284-15-0P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (preparation and spectra of)
 RN 96284-15-0 CAPLUS
 CN Phosphine, [bis(trichlorosilyl)methyl]dimethyl- (9CI) (CA INDEX NAME)



L11 ANSWER 11 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1983:34626 CAPLUS
 DOCUMENT NUMBER: 98:34626
 TITLE: Silaethenes. X. Phosphinoethylsilacyclobutanes
 AUTHOR(S): Auner, N.; Grobe, J.
 CORPORATE SOURCE: Eduard-Zintl-Inst. Anorg. Chem., Tech. Hochsch.
 Darmstadt, Darmstadt, Fed. Rep. Ger.
 SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie
 (1982), 489, 23-41
 CODEN: ZAACAB; ISSN: 0044-2313
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 OTHER SOURCE(S): CASREACT 98:34626
 GI



AB Photoaddn. of phosphines to vinylsilanes gave .apprx.30 phosphinoethylsilanes, e.g., Me₂Si(CH₂PMe₂)₂, I, and II. The addition proceeded anti-Markownikoff; the small portion of the Markownikoff product was larger for (F₃C)₂PH than for Me₂PH.
 IT 33845-46-4P 33845-47-5P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)
 RN 33845-46-4 CAPLUS
 CN Phosphine, dimethyl[2-(trifluorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)

F₃Si-CH₂-CH₂-PMe₂

RN 33845-47-5 CAPLUS

CN Phosphine, dimethyl[2-(trichlorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)

Cl₃Si-CH₂-CH₂-PMe₂

L11 ANSWER 12 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1981:550878 CAPLUS

DOCUMENT NUMBER: 95:150878

TITLE: ω -Alkenyl silanes and $\alpha\omega$ -silyl alkanes

INVENTOR(S): Oswald, Alexis A.; Murrell, Lawrence L.

PATENT ASSIGNEE(S): Exxon Research and Engineering Co. , USA

SOURCE: U.S., 18 pp. Cont.-in-part of U.S. 4,083,803.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4268682	A	19810519	US 1977-859826	19771212
US 3907852	A	19750923	US 1972-265507	19720623
US 4083803	A	19780411	US 1975-610628	19750905
PRIORITY APPLN. INFO.:			US 1972-265507	A2 19720623
			US 1975-610628	A2 19750905

AB R₃Si(CH₂)_n+2CH:CH₂ [R₃Si = Cl₃Si, Cl₂SiMe, (EtO)₃Si, n = 2, 4, 6, 10], prepared by addition of R₃SiH to an alkadiene, were treated with R₂1PH to give R₂1P(CH₂)_m+2SiR₃ (R₁ = Ph, cyclohexyl, Pr, m = 0, 1, 6, 12) which were complexed with Rh(CO)₂Cl₂ to give e.g., [R₂1P(CH₂)_m+2SiCl₃]₂Rh(CO)Cl which were useful as catalyst for hydroformylation, hydrogenation, or carbonylation. Thus, addition of Cl₃SiH to CH₂:CH(CH₂)₄CH:CH₂ gave Cl₃Si(CH₂)₆CH:CH₂, which was treated with Ph₂PH to give 70% Ph₂P(CH₂)₈SiCl₃. The latter was treated with Rh(CO)₂Cl₂ to give [Ph₂P(CH₂)₈SiCl₃]₂Rh(CO)Cl whose catalytic properties were determined by hydroformylation of propylene and by hydrogenation of cyclohexene.

IT 52217-67-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and reaction with dicarbonyldichlororhodium)

RN 52217-67-1 CAPLUS

CN Phosphine, dipropyl[2-(trichlorosilyl)ethyl]- (9CI) (CA INDEX NAME)

(n-Pr)₂P-CH₂-CH₂-SiCl₃

L11 ANSWER 13 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

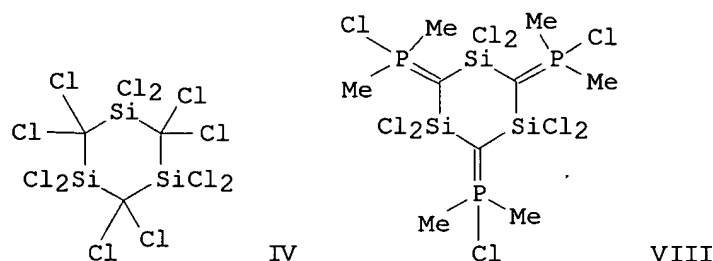
ACCESSION NUMBER: 1981:443236 CAPLUS

DOCUMENT NUMBER: 95:43236

TITLE: Formation of organosilicon compounds. 83. Formation, reactions, and structure of ylides from perchlorinated carbosilanes

AUTHOR(S): Fritz, G.; Braun, U.; Schick, W.; Hoenle, W.; Von

CORPORATE SOURCE: Schnering, H. G.
 Inst. Anorg. Chem., Univ. Karlsruhe, Karlsruhe, Fed.
 Rep. Ger.
 SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie
 (1981), 472, 45-68
 CODEN: ZAACAB; ISSN: 0044-2313
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 GI



AB The CCl-moiety in perchlorinated carbosilanes such as $(\text{Cl}_3\text{Si})_2\text{CCl}_2$ (I), $\text{Cl}_3\text{SiCH}_2\text{SiCl}_2\text{CCl}_2\text{SiCl}_3$ (II), $(\text{Cl}_3\text{SiCCl}_2)_2\text{SiCl}_2$ (III), or IV, cleaves the Si-P bond of $\text{Me}_3\text{SiPMe}_2$ (V); and by subsequent rearrangement ylides are formed. Treatment of V with I yields $(\text{Cl}_3\text{Si})_2\text{C}:\text{PMe}_2\text{Cl}$ (VI), which also results from the reaction of Me_2PPMe_2 with I. The ylides also can be obtained by means of treating I-IV with LiPMe_2 . Thus, III with 1 mol of LiPMe_2 yields $\text{Cl}_3\text{SiCCl}_2\text{SiCl}_2\text{C}(:\text{PMe}_2\text{Cl})\text{SiCl}_3$ or $\text{Cl}_3\text{SiC}(:\text{PMe}_2\text{Cl})\text{SiCl}_2\text{C}(:\text{PMe}_2\text{Cl})\text{SiCl}_3$, resp., with 2 mol of LiPMe_2 . The corresponding Si-methylated derivs. do not form ylides; e.g., $(\text{Me}_3\text{Si})_2\text{CCl}_2$ with VI in benzene yields $\text{Me}_3\text{SiCH}(\text{PMe}_2)\text{SiMe}_3$. MeLi methylates VI to yield $(\text{Cl}_3\text{Si})_2\text{C}:\text{PMe}_3$ (VII). With either LiPMe_2 , $\text{Me}_3\text{SiPMe}_2$, or Me_2PPMe_2 , VI forms $(\text{Cl}_3\text{Si})_2\text{C}:\text{PMe}_2\text{PMe}_2$. Treating VI with $\text{MeO-Et}_2\text{NH}$, $(\text{Cl}_3\text{Si})[\text{SiCl}_2(\text{OMe})]\text{C}:\text{PMe}_2(\text{OMe})$ is formed. Ylides also result from the reactions of partially C-chlorinated 1,1,3,3,5,5-hexachloro-1,3,5-trisilacyclohexanes with $\text{Me}_3\text{SiPMe}_2$; IV with 3 mol of $\text{Me}_3\text{SiPMe}_2$ or LiPMe_2 , resp., yields VIII, which crystallizes with 1 mol of monoglyme. X-ray structure detns. revealed that VI-VIII are planar.

IT 78313-08-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)

RN 78313-08-3 CAPLUS

CN Phosphine, dimethyl[(trichlorosilyl)methyl]- (9CI) (CA INDEX NAME)

$\text{Cl}_3\text{Si}-\text{CH}_2-\text{PMe}_2$

L11 ANSWER 14 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1979:142652 CAPLUS

DOCUMENT NUMBER: 90:142652

TITLE: Silylhydrocarbyl phosphine transition metal complexes

INVENTOR(S): Oswald, Alexis A.; Murrell, Lawrence L.

PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA

SOURCE: U.S., 18 pp. Cont.-in-part of U.S. 4,083,803.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4134906	A	19790116	US 1977-829898	19770901
US 3907852	A	19750923	US 1972-265507	19720623
US 4083803	A	19780411	US 1975-610628	19750905
PRIORITY APPLN. INFO.:			US 1972-265507	A2 19720623
			US 1975-610628	A2 19750905

AB Heterogeneous silylhydrocarbyl phosphine transition metal complex catalysts and intermediates therefore were prepared by the selective monoaddn. of silane having Cl, alkoxy, or acyloxy groups to an α,ω -diene, followed by the addition of a phosphine to the resulting ω -alkenyl silanes to form the corresponding silylalkyl phosphines, which were then covalently anchored as such or in the form of their transition metal complexes via condensation of their reactive silane substituents with hydroxy groups of silica and metal oxides, optionally followed by complexing the free phosphine groups of anchored silylalkyl phosphines with transition metal compds. The synthesis of numerous silanes, silane-phosphine compds., and transition metal complexes is given. Most of the catalysts are Rh-containing complexes, but other metal complexes containing Pd and Co were prepared

IT 52217-67-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 52217-67-1 CAPLUS

CN Phosphine, dipropyl[2-(trichlorosilyl)ethyl]- (9CI) (CA INDEX NAME)

$(n\text{-Pr})_2\text{P}-\text{CH}_2-\text{CH}_2-\text{SiCl}_3$

L11 ANSWER 15 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1978:442543 CAPLUS

DOCUMENT NUMBER: 89:42543

TITLE: Synthesis and catalytic properties of complexes of transition metals with ligands fixed on oxide support surfaces. II. Fixed carbonylphosphine complexes of cobalt as catalysts for the selective hydrogenation of polyolefins

AUTHOR(S): Kuznetsov, V. L.; Kuznetsov, B. N.; Ermakov, Yu. I.

CORPORATE SOURCE: Inst. Katal., Novosibirsk, USSR

SOURCE: Kinetika i Kataliz (1978), 19(2), 346-53

CODEN: KNKTA4; ISSN: 0453-8811

DOCUMENT TYPE: Journal

LANGUAGE: Russian

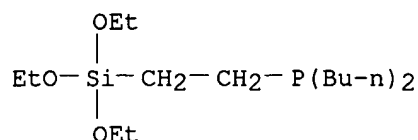
AB The title catalysts were prepared by treatment of silica gel with $(\text{EtO})_3\text{SiCH}_2\text{CH}_2\text{PR}_2$ ($\text{R} = \text{Ph}, \text{Bu}, \text{C}_6\text{H}_{11}$), followed by reaction with $\text{Co}_2(\text{CO})_8$. Catalysts having 1.3-2.6% Co and P/Co ratios of 0.9-1.17 were obtained; IR anal. indicated certain structural differences. The catalytic properties of these complexes in the hydrogenation of cis,trans,trans-1,5,9-cyclododecatriene resembled those of homogeneous Co complexes, especially in the selectivity for monoene formation ($\leq 96\%$).

IT 66838-73-1D, reaction product with silica and cobalt octacarbonyl

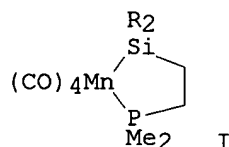
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for hydrogenation of cyclododecatriene)

RN 66838-73-1 CAPLUS

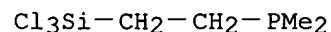
CN Phosphine, dibutyl[2-(triethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 16 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1978:50995 CAPLUS
 DOCUMENT NUMBER: 88:50995
 TITLE: Alternative ligands. VII: Chelate complexes of the type $(\text{CO})_4\text{MnPMe}_2\text{CH}_2\text{CH}_2\text{SiX}_2$ (Me = CH₃; X = CH₃, Cl) having Mn-Si bonding
 AUTHOR(S): Grobe, J.; Walter, A.
 CORPORATE SOURCE: Eduard Zintl-Inst., Tech. Hochsch. Darmstadt, Darmstadt, Fed. Rep. Ger.
 SOURCE: Journal of Organometallic Chemistry (1977), 140(3), 325-48
 CODEN: JORCAI; ISSN: 0022-328X
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 GI



AB Chelate complexes I (R = Me, Cl) were prepared from $\text{Na}[\text{Mn}(\text{CO})_5]$ and $\text{HMn}(\text{CO})_5$, resp., by two-step reactions with the ligands $\text{Me}_2\text{PCH}_2\text{CH}_2\text{SiR}_2\text{R}_1$ (R₁ = e.g. Cl) using alkali salt, amine or HCl elimination. I (R = Cl) is also obtained by cleavage of $\text{Mn}_2(\text{CO})_{10}$ with $\text{Me}_2\text{PCH}_2\text{CH}_2\text{SiCl}_3$. In the case of $\text{HMn}(\text{CO})_5$ the intermediates $(\text{CO})_4\text{Mn}(\text{H})\text{L}$ [L = $\text{Me}_2\text{PSiMe}_3$, $\text{Me}_2\text{PCH}_2\text{CH}_2\text{SiMe}_2(\text{NMe}_2)$, $\text{Me}_2\text{PCH}_2\text{CH}_2\text{SiCl}_2(\text{NMe}_2)$] can be isolated.
 IT 33845-47-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and reaction with manganese complex)
 RN 33845-47-5 CAPLUS
 CN Phosphine, dimethyl[2-(trichlorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)



L11 ANSWER 17 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1977:422179 CAPLUS
 DOCUMENT NUMBER: 87:22179
 TITLE: Alternative ligands. 6. A new type of 3z-2e bonding system
 AUTHOR(S): Grobe, Joseph; Martin, Roland; Moeller, Uwe
 CORPORATE SOURCE: Eduard-Zintl-Inst., Tech. Hochsch. Darmstadt,

SOURCE:

Darmstadt, Fed. Rep. Ger.
Angewandte Chemie (1977), 89(4), 257-8
CODEN: ANCEAD; ISSN: 0044-8249

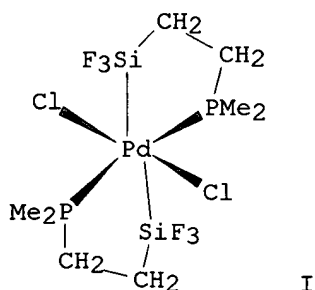
DOCUMENT TYPE:

Journal

LANGUAGE:

German

GI



AB The planarity of the PdCl₂P₂ moiety in I occurs via participation of 4d_{x²-y²}, 5s, 5p_x, 5p_y orbitals of Pd. The Pd-Si bonds are described in terms of a coordinate 3z-2e bond.

IT 33845-46-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with palladium benzonitrile complex)

RN 33845-46-4 CAPLUS

CN Phosphine, dimethyl[2-(trifluorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)

F₃Si-CH₂-CH₂-PMe₂

L11 ANSWER 18 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1976:559271 CAPLUS

DOCUMENT NUMBER: 85:159271

TITLE: Supported transition metal complexes. V. Liquid phase catalytic hydrogenation of 1-hexene, cyclohexene and isoprene under continuous flow conditions

AUTHOR(S): Allum, K. G.; Hancock, R. D.; Howell, I. V.; Lester, T. E.; McKenzie, S.; Pitkethly, R. C.; Robinson, P. J.

CORPORATE SOURCE: BP Res. Cent., Br. Pet. Co. Ltd., Sunbury-on-Thames/Middlesex, UK

SOURCE: Journal of Catalysis (1976), 43(1-3), 331-8
CODEN: JCTLA5; ISSN: 0021-9517

DOCUMENT TYPE: Journal

LANGUAGE: English

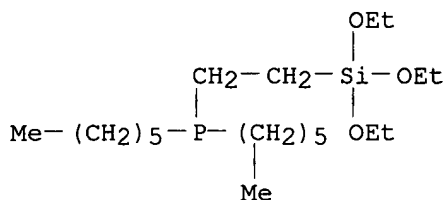
AB Three complexes of Rh and one of Ir of the type MX (phosphine)_n (X = halide; n = 2, 3), chemical bonded to silica, catalyze the hydrogenation of 1-hexene, cyclohexene, and isoprene in the liquid phase under a variety of continuous flow conditions (15-50 atm H, 20-160°). BuSH in the feedstock reduces the activity, but increases the thermal stability of the catalysts.

IT 55120-19-9

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with rhodium and iridium complexes)

RN 55120-19-9 CAPLUS

CN Phosphine, dihexyl[2-(triethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 19 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1976:105685 CAPLUS

DOCUMENT NUMBER: 84:105685

TITLE: Stepwise addition of silanes and phosphines to α,ω -dienes. Approach to novel phosphine ligand anchoring reagents for silica

AUTHOR(S): Oswald, Alexis A.; Murrell, Lawrence L.; Boucher, Lawrence J.

CORPORATE SOURCE: Corp. Res. Lab., Esso Res. and Eng. Co., Linden, NJ, USA

SOURCE: Preprints - American Chemical Society, Division of Petroleum Chemistry (1974), 19(1), 155-61
CODEN: ACPCAT; ISSN: 0569-3799

DOCUMENT TYPE: Journal

LANGUAGE: English

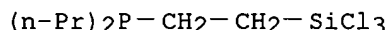
AB Silylalkylphosphine anchoring reagents for silica were prepared via sequential silane and phosphine addition to α,ω -dienes. Thus, hydrosilylation of $\text{H}_2\text{C}:\text{CH}(\text{CH}_2)_n\text{CH}:\text{CH}_2$ with R_3SiH gave 80-90% $\text{H}_2\text{C}:\text{CH}(\text{CH}_2)_n\text{CH}_2\text{CH}_2\text{SiR}_3$ (I) and $\text{R}_3\text{SiCH}_2\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{CH}_2\text{SiR}_3$ (SiR_3 , n given): SiMeCl_2 , 6; SiCl_3 , 4; $\text{Si}(\text{OEt})_3$, 4; SiCl_3 , 8. An excess of the diene reactant increased the selectivity to the monoadduct. Addition of $\text{R}_1\text{R}_2\text{PH}$ to I gave 46-95% $\text{R}_1\text{R}_2\text{P}(\text{CH}_2)_m\text{SiR}_3$ ($\text{R}_1 = \text{Ph}$, $\text{R} = \text{Cl}$, OEt , OAc ; $\text{R}_1 = \text{Pr}$, $\text{R} = \text{Cl}$).

IT 52217-67-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 52217-67-1 CAPLUS

CN Phosphine, dipropyl[2-(trichlorosilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 20 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1975:413208 CAPLUS

DOCUMENT NUMBER: 83:13208

TITLE: Hydrogenating unsaturated compounds

INVENTOR(S): Pitkethly, Robert C.; McKenzie, Samuel; Allum, Keith G.

PATENT ASSIGNEE(S): British Petroleum Co. Ltd.

SOURCE: Brit., 17 pp.
CODEN: BRXXAA

DOCUMENT TYPE: Patent

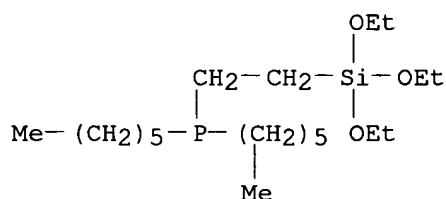
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1372189	A	19741030	GB 1970-47846	19711001

- AB Hydrogenation catalysts for the conversion of alkenes to alkanes and dienes to alkenes, and for the treatment of steam cracked gasoline comprised transition metals bonded to P atoms of P-containing groups chemical linked to the surface of a particulate inorg. support, e.g. silica [7631-86-9] or alumina [1344-28-1], by chemical reactions of HO groups on the support surface. The catalysts are active in the absence and presence of mercaptan and thiophene S. They can be reused and are stabilized by contact with mercaptans, thiophene [110-02-1], thiophenol [108-98-5], and carbon disulfide [75-15-0]. Thus, (EtO)₃Si(CH₂)₂PPh₂ [18586-39-5] was added to cycloocta-1,5-diene rhodium chloride [[RhCl(C₈H₁₂)]₂] [12092-47-6], to give RhCl[(EtO)₃Si(CH₂)₂PPh₂]₃ [55465-37-7]. The complex was treated in C₆H₆ with silica to give a silica-bonded Rh catalyst containing 0.9 weight % Rh. Stirring 0.5 g catalyst in H-saturated heptane containing 25 ml 1-hexene [592-41-6] at 60° and 1 atm H gave a 50 weight % conversion with a 45 weight % selectivity to hexane [110-54-3].
- IT 55120-19-9D, Phosphine, dihexyl[2-(triethoxysilyl)ethyl]-, reaction products with dicobalt octacarbonyl
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for hydrogenation of alkenes)
- RN 55120-19-9 CAPLUS
- CN Phosphine, dihexyl[2-(triethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 21 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1975:160726 CAPLUS

DOCUMENT NUMBER: 82:160726

TITLE: Supported transition metal complexes. II. Silica as the support

AUTHOR(S): Allum, K. G.; Hancock, R. D.; Howell, I. V.; McKenzie, S.; Pitkethly, R. C.; Robinson, P. J.

CORPORATE SOURCE: BP Res. Cent., British Pet. Co., Ltd., Sunbury-on-Thames/Middx., UK

SOURCE: Journal of Organometallic Chemistry (1975), 87(2), 203-16

CODEN: JORCAI; ISSN: 0022-328X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Liganding groups may be chemical bonded to SiO₂ by reaction of the surface silanols with mols. of the type RSiX₃, in which R is an organic group containing

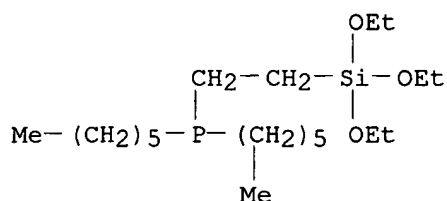
a ligand atom and X is a hydrolysable group (e.g., OEt). Ligand-silicas, so formed, may be used to prepare transition metal complexes. Alternatively, complexes with a ligand containing a SiX₃ group may be prepared and subsequently bonded to the SiO₂ surface. The principles are illustrated by the preparation of some P, N, S, and O donor ligands and ligand-silicas. Carbonyl containing Rh complexes of these ligands are described.

IT 55120-19-9

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with silica in preparation of rhodium carbonyl catalysts)

RN 55120-19-9 CAPLUS
 CN Phosphine, dihexyl[2-(triethoxysilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 22 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1974:83252 CAPLUS
 DOCUMENT NUMBER: 80:83252
 TITLE: Silylhydrocarbylphosphines and related compounds
 INVENTOR(S): Oswald, Alexis A.; Murrell, Lawrence L.
 PATENT ASSIGNEE(S): esoo
 SOURCE: Ger. Offen., 80 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2332167	A1	19740110	DE 1973-2332167	19730625
DE 2332167	B2	19810619		
DE 2332167	C3	19820429		
US 3907852	A	19750923	US 1972-265507	19720623
CA 1008460	A1	19770412	CA 1973-174243	19730618
NL 7308749	A	19731227	NL 1973-8749	19730622
FR 2189119	A1	19740125	FR 1973-22952	19730622
FR 2189119	B1	19830204		
IT 990682	A	19750710	IT 1973-25762	19730622
GB 1440801	A	19760630	GB 1973-29696	19730622
JP 49055628	A2	19740530	JP 1973-71239	19730623
JP 57015600	B4	19820331		
DE 2366357	C2	19821216	DE 1973-2366357	19730623
DE 2366359	C2	19840913	DE 1973-2366359	19730623
DE 2366397	C2	19870205	DE 1973-2366397	19730623
PRIORITY APPLN. INFO.:			US 1972-265507	A 19720623

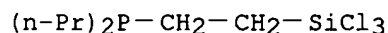
AB (Silylalkyl)phosphine complex catalysts for hydroformylation, carbonylation, Oxo, and hydrogenation reactions were prepared. Thus, 1,7-octadiene was treated with HSiCl_3 and the resulting $\text{CH}_2\text{:CH}(\text{CH}_2)_6\text{SiCl}_3$ treated with Ph_2PH to give $\text{Ph}_2\text{P}(\text{CH}_2)_8\text{SiCl}_3$. The phosphine was anchored on silica and treated with $\text{Rh}(\text{CO})_2\text{Cl}_2$ to give $[\text{Ph}_2\text{P}(\text{CH}_2)_8\text{SiCl}_3]_2\text{Rh}(\text{CO})\text{Cl}$.

IT 52217-67-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)

RN 52217-67-1 CAPLUS

CN Phosphine, dipropyl[2-(trichlorosilyl)ethyl]- (9CI) (CA INDEX NAME)



L11 ANSWER 23 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1971:510377 CAPLUS
 DOCUMENT NUMBER: 75:110377
 TITLE: Silicon-functional 2-(dimethylphosphino)ethylsilanes
 AUTHOR(S): Grobe, J.; Moeller, U.
 CORPORATE SOURCE: Inst. Anorg. Chem., Univ. Karlsruhe, Karlsruhe, Fed. Rep. Ger.
 SOURCE: Journal of Organometallic Chemistry (1971), 31(2), 157-67
 CODEN: JORCAI; ISSN: 0022-328X
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 AB Si-functional 2-(dimethylphosphino)ethylsilanes $X_3SiCH_2CH_2PMe_2$ and $X_2Si(CH_2CH_2PMe_2)_2$ ($X = F, Cl$) are prepared by the photochem. addition of $HPMe_2$ to the vinylhalosilanes $X_2SiCH:CH_2$ and $X_2Si(CH:CH_2)_2$, resp. Formation of adducts between the vinylhalosilanes and $HPMe_2$ is observed as a competitive reaction. Starting with the solid adducts the addition of $HPMe_2$ to the C-C double bond occurs considerably slower. A similar coordination between X_3Si or X_2Si and Me_2P groups of the products leads to the formation of polyadducts besides monomers and oligomers.
 IT 33845-46-4P 33845-47-5P
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)
 RN 33845-46-4 CAPLUS
 CN Phosphine, dimethyl[2-(trifluorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)

$F_3Si-CH_2-CH_2-PMe_2$

RN 33845-47-5 CAPLUS
 CN Phosphine, dimethyl[2-(trichlorosilyl)ethyl]- (8CI, 9CI) (CA INDEX NAME)

$Cl_3Si-CH_2-CH_2-PMe_2$

L11 ANSWER 24 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1962:410931 CAPLUS
 DOCUMENT NUMBER: 57:10931
 ORIGINAL REFERENCE NO.: 57:2247b-e
 TITLE: Synthesis of organophosphorous-substituted silanes and polysiloxanes
 AUTHOR(S): Niebergall, Heinz
 CORPORATE SOURCE: Battelle Inst., Frankfurt, Germany
 SOURCE: Makromolekulare Chemie (1962), 52, 218-29
 CODEN: MACEAK; ISSN: 0025-116X
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable

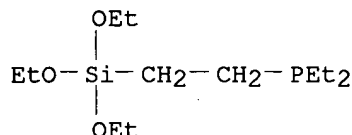
AB R_2PH (I), $R_2P(S)H$ (II), and $R_2P(O)H$ (III) could be added readily and nearly quant, across the ethylenic double bond of alkenylsilanes. The addition reaction, performed in a N atmospheric did not require a solvent and

was

catalyzed by ultraviolet (UV) or free radical catalysts. Thus, 2.1 g. $Me_2Si(CH:CH_2)_2$ and 3.4 g. Et_2PH (IV) were weighed under N into a quartz tube which had been flushed with N. The reaction mixture was then illuminated with UV. Because of the exothermic nature of the reaction the light intensity was moderate initially, and was increased as the reaction progressed. The reaction was complete after 24-8 hrs., and after fractional distn, the product was obtained as an oil in 96% yield. Other reactants and yields were: $Me_2Si(CH_2CH:CH_2)_2$, Ph_2PH , 97%; $(CH_2:CH)_4Si$, IV, 95; $(CH_2:CH)_4Si$, Ph_2PH , 62%; $(MeO)_2Si(CH_2CH:CH_2)_2$, IV, 87%;

(EtO)3SiCH:CH2, IV, 98%; Cl2PhSiCH:CH2, (Ph)2PH, 96%; Cl2PhSiCH:CH2, IV, 94%; Cl2Si(CH:CH2)2, IV, 71; (EtO)3SiCH:CH2, Et2P(S)H, 94%. The addnl, products derived from I underwent reactions characteristic of tertiary phosphines. Addition products of alkenyl alkoxysilanes and alkenyl chlorosilanes could be hydrolyzed and condensed to P-containing polysiloxanes. These polymers also resulted from addition of I, II, and III to polyalkenyl polysiloxanes.

IT 18082-97-8, Phosphine, diethyl[2-(triethoxysilyl)ethyl]-
(preparation of)
RN 18082-97-8 CAPLUS
CN Phosphine, diethyl[2-(triethoxysilyl)ethyl]- (7CI, 8CI, 9CI) (CA INDEX NAME)



L11 ANSWER 25 OF 25 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1962:60687 CAPLUS
DOCUMENT NUMBER: 56:60687
ORIGINAL REFERENCE NO.: 56:11622a-d
TITLE: Organic compounds containing phosphorus and silicon
INVENTOR(S): Niebergall, Heinz
PATENT ASSIGNEE(S): Koppers Co., Inc.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1118781		19591212	DE 1959-N16250	19590212
GB 925721			GB	

AB Phosphines, phosphine sulfides, and phosphine oxides added to the double bonds of unsatd. silanes. The reaction took place without catalysts, but free radical forming compds., ultraviolet light and tertiary amines catalyzed the reaction. Ethers and saturated hydrocarbons were solvents. Et2PH (15.2 g.) and 10.13 g. Me2Si(CH:CH2)2 were irradiated 30 hrs. with ultraviolet light under N. Distillation yielded 20.2 g. (Et2P-CH2CH2)2SiMe2,

b3 155-60°. The following compds. were prepared (compound, b.p./mm., and % yield given): (Et2PCH2-CH2)2SiCl2, 139-40.5°/2, 85; Me2Si[(CH2)3PEt2]2, 170-1°/4, 97; (EtO)3SiCH2CH2PEt2, 123-4°/10, 98; [Et2P(CH2)3-Si(OCH3)2, 182-4°/3, 79; (EtO)3SiCH2CH2P(S)Et2, 145-8°/ 2, 100; (EtO)3SiCH2CH2P(S)Et2, 137-40°/2, 87; Me3Si-(CH2)12PEt2, -, 100; (EtO)3SiCH2CH2PEt2, 178-9°/2, 78. 5; Et2PCH2CH2Si(Ph)Cl2, 126-7.5°/2, 85; [Ph2-PCH2CH2]4Si, - [m. 208-11° (benzene)], 58; [Et2PCH2-CH2]4Si, 224.5-28°/2, 91; a product from (CH2:CHCH2)4Si and Ph2PH, -, -; from Me3SiCMe:CHMe and Et2Ph, -, -; from PhCH:CHSiEt3 and Et2PH, -, -. The compds. were useful as biocides, textile auxiliaries, stabilizers, inhibitors, lubricants, lubricant additives, hydraulic oils, anti-foams, plasticizers, vulcanization promoters, and for hydrophobing and flame proofing. Cf. U.S. 2,843,615. (CA 53, 1147d.

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